

REPAIR CUMBERLAND ROAD.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING A REPORT OF

THE SUPERINTENDENT OF THE CUMBERLAND ROAD,

RELATIVE TO THE

MODE OF REPAIRING THE SAME.

JANUARY 14, 1828.

Read, and referred to the Committee on Roads and Canals.

WASHINGTON :

PRINTED BY GALES & SEATON.

1828.

REPAIR CUMBERLAND ROAD.

ALBERT B.

THE SECRETARY OF WAR

THE SUBCOMMITTEE OF THE CUMBERLAND ROAD

MODE OF REPAIRING THE SAME

REPORT OF THE SUBCOMMITTEE

WASHINGTON

PRINTED BY GILES & CATTON

WAR DEPARTMENT,

Washington City, January 7th, 1828.

SIR: In compliance with a resolution of the House of Representatives, passed the 4th of January, 1828, I have the honor to transmit a report of the Chief Engineer, accompanied by the report of the Superintendent of the Cumberland Road, on the mode of repairing that road.

I have the honor to be,

Very respectfully,

Your obedient servant.

JAMES BARBOUR.

HON. ANDREW STEVENSON,

Speaker of the House of Representatives.

WAR DEPARTMENT,

Washington City, January 7th, 1898.

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I have the honor to be,

Very respectfully,

Your obedient servant,

JAMES BARBOUR.

Hon. ANTHONY STANTON,

Speaker of the House of Representatives.

ENGINEER DEPARTMENT,

Washington City, January 7th, 1828.

SIR : In pursuance of your order, and in compliance with a resolution of the House of Representatives, I have the honor to transmit, herewith, the report of the Superintendent of the Cumberland Road, relative to the mode of repairing that road, made to this Department in the month of May last.

I have the honor to be,
Very respectfully,
Your obedient servant,

ALEX. MACOMB,
Major General, Chief Engineer.

HON. JAMES BARBOUR,
Secretary of War.

ST. CLAIRSVILLE, OHIO, *May 25, 1827.*

SIR : In obedience to your instructions, directing me to join Mr. Ewing in the examination of the Cumberland road, and report on the best manner of effecting its repair, with the appropriation made at the last session of Congress for that purpose, I met Mr. Ewing, by appointment, at Wheeling, on the 13th of this instant, which was as early a day as my present employment would justify, and proceeded with him over the whole road.

That the Department may fully understand the subsequent remarks, I will give a succinct description of the plan upon which that road was constructed. A bed, or channel, of the width of the intended cover, and of the depth of about one foot, was first prepared ; in this channel was laid a pavement, composed of stone, about one foot in height, in contact with each other, so as to form a surface as even as practicable. On part of the road those large stones were set edgewise, but on the balance they appear to have been laid promiscuously, regard having been alone paid to the general regularity of the thickness of the pavement formed with them. and the evenness of its surface. Upon this substratum was broken a superstratum of stones, of a size so as to pass through a ring of three inches diameter, of about six inches in thickness.

That an estimate, which could only approximate truth, should be made of the cost of repairing the road, by preserving, or in accordance with, the plan upon which it was constructed, notes were taken of it, as if divided into three classes. The notes taken, furnish the following result, viz.

	Miles of 1st class.	Miles of 2d class.	Miles of 3d class.
On the 1st 10 miles	$8\frac{3}{8}$	$1\frac{3}{8}$	$0\frac{2}{8}$
2d 10 "	$7\frac{5}{8}$	$1\frac{6}{8}$	$0\frac{7}{8}$
3d 10 "	$4\frac{4}{8}$	$4\frac{7}{8}$	$0\frac{5}{8}$
4th 10 "	4	$4\frac{3}{8}$	$1\frac{5}{8}$
5th 10 "	$2\frac{5}{8}$	$2\frac{5}{8}$	$4\frac{6}{8}$
6th 10 "	6	$2\frac{6}{8}$	$1\frac{2}{8}$
7th 10 "	$5\frac{4}{8}$	2	$2\frac{4}{8}$
8th 10 "	$8\frac{1}{8}$	$1\frac{1}{8}$	$0\frac{4}{8}$
9th 10 "	$6\frac{5}{8}$	$1\frac{6}{8}$	$1\frac{5}{8}$
10th 10 "	$6\frac{4}{8}$	3	$0\frac{8}{8}$
11th 10 "	$4\frac{7}{8}$	$2\frac{6}{8}$	$2\frac{3}{8}$
12th 10 "	$4\frac{5}{8}$	$2\frac{7}{8}$	$2\frac{6}{8}$
13th 10 "	$6\frac{6}{8}$	$1\frac{4}{8}$	$1\frac{8}{8}$
Total 130 miles	$75\frac{7}{8}$	$32\frac{7}{8}$	$21\frac{4}{8}$

In the first class is comprehended such parts as have upon them, perhaps, on an average, about one-half of the original quantity of small stone; in the second class are embraced such portions as are nearly, but not quite, destitute of the cover of small stones; and the third class contains such pieces as are entirely destitute of the cover of broken stone, and such parts as are not only thus naked, but are, in some spots, destitute of the pavement also. By preserving the original work unmolested, that is, permitting the pavement to remain as it is, only repairing it where its unity is broken, it is believed that the road can be put in very good travelling condition by putting upon the first class a cover of three inches; upon the second class, a cover of four and a half inches; and upon the third class, one of six inches in thickness, of metal of good quality, reduced to a size not exceeding four ounces in weight. To effect this, it is estimated that the

1st class, $75\frac{7}{8}$ miles, will cost \$3 75 per pole, or \$1,200
per mile - - - - - \$90,750
2d class, $32\frac{7}{8}$ miles, \$5 25 per pole, or \$1.680 per mile - - - 55,230
3d class, $21\frac{4}{8}$ miles, \$7 per pole, or \$2,240 a mile - - - 48,160
For cleaning side drains and opening culverts, $12\frac{1}{2}$ cents
per pole, or \$40 a mile, for 130 miles - - - 5,200
Add ten per cent. for contingent expenses - - - 19,934

\$219,274

This estimate, which could only approximate truth, should be taken as a basis for the cost of repairing the road, by preserving, or in accordance with the plan upon which it was constructed, notes were taken in it as it applied into three classes. The notes taken furnish the following results:

And we have the cost of the road, inclusive of masonry,		
the sum of	-	219,274
Repair of masonry estimated at	- 10,000	
Ten per cent. for contingent expenses	- 1,000	
	<hr/>	11,000
		<hr/>
		\$230,274

And we have the total cost of the repair of the road, on the old plan, the sum of two hundred and thirty-thousand two hundred and seventy-four dollars.

It was estimated in February, 1826, that a thorough repair upon the McAdam plan, by taking up the stone of which the cover was then composed, reducing them to the requisite size, and relaying them to the thickness of nine inches, regraduating such parts as are of, and greater than, five degrees above a horizontal line, including the repair of the masonry, and all contingent expenses, would cost \$ 2,146 02½ per mile, or, for the whole distance of one hundred and thirty miles, the sum of two hundred and seventy-eight thousand nine hundred and eighty-three dollars and sixty-eight cents. Since that time, the superstratum, or cover of reduced stone, has worn and washed away to an extent almost incredible, and has shown that too much reliance was placed upon the layer of large stone in that estimate, as there are not so many of them of as good a quality as was then supposed. To effect such a repair now, as was then contemplated, would require a considerable larger sum than was then believed to be sufficient. I would say at least \$50,000. To the above sum of \$278,983 68, let \$ 50,000 be added, and it gives the sum of \$ 328,983 68, as the estimate cost, at this time, of such repair as was then contemplated, and exhibits a difference of cost between a repair upon the old and the McAdam plan, of \$ 98,709 68 in favor of the former.

Notwithstanding this great difference of cost, I would most unhesitatingly and decisively give the preference to the McAdam plan. In doing so, I would be influenced by the fact, that, when done, the work would be more permanent, and could be kept in good order at a less expense, and the graduation would be moderated, which is a most desirable object. If the repair be made upon the old plan, the cover of small stone will grind and wear away rapidly, because of the stubborn, unyielding, and inflexible solidity of the substratum. There is not, there cannot be, in the present substratum, any of that yielding elasticity to heavy pressure so essential to the preservation and durability of artificial roads which are covered with metal.

It is evident, then, that a complete repair cannot be accomplished either upon the old or new plan, with the sum appropriated, (\$ 30,000.) If no more of the road was worn out than could with that sum be thoroughly repaired upon the McAdam plan, and the remainder of the line was in tolerable travelling order; or, if the present was the first of an intended series of annual appropriations, I would not, for one moment, hesitate to recommend its application to so much of the road as could be completely repaired by its expenditure upon the McAdam plan. But, as neither is the fact, and as almost every part

of the road requires some repair, and almost every part will sustain further injury, unless some repair be speedily made, I would respectfully suggest, for your consideration, the propriety of first applying the appropriation to such objects as are indispensable to preserve it from that further injury, viz: to the opening of the side drains and culverts, next to the temporary repair of the third class of the road; and, lastly, to the second class; so as to save them, if practicable, from utter destruction, until Congress shall devise some efficient and permanent system for the preservation of this most important monument of the national beneficence.

Whether those repairs shall be made by contract, or by the employment of companies of laborers, under qualified and faithful directors, is a matter for the determination of the Superintendent; and the one or the other, or both, of those modes must be adopted, as circumstances seem to require. The contract system is preferable, in my opinion, in all such cases as admit of an accurate and definite designation of the work to be performed. In such cases as are not susceptible of such designation, and this will be the largest class in the progress of the repair of that road, I would prefer the other mode. Great care must be used in the selection of the directors of the companies of laborers. Whilst engaged in the examination of the road, I felt it to be my duty freely to communicate my imperfect ideas in relation to the repair of each particular part, which could alone be done on the ground to be fully comprehended. The duty of the superintendent is an arduous and responsible one, and if he should be so fortunate as to apply the means, limited indeed, when the magnitude of the object to be effected—the repair of one hundred and thirty miles of road, and that, too, in a most wretched condition—is considered, so as to escape the public censure, he will have done more than any person, in the smallest degree conversant with such matters, would have expected. I have a perfect confidence that the most judicious application of the fund will be made by Mr. Ewing.

It is very much to be regretted, indeed, that this road had not been confided to the superintending of a qualified person, as soon as it was made and the requisite funds placed at his disposal, to make such constant and regular repairs as artificial roads require. Had this been done, a smaller sum, judiciously expended, would have not only kept the road in good repair, but would really have improved its condition. Constant and close attention is more particularly necessary to artificial roads, as soon as they come out of the contractors' hands, and for some time thereafter, than at any subsequent period.

Respectfully submitted.

CASPAR W. WEVER,

Superintendent U. S. Road.

Major Gen. ALEXANDER MACOMB,

Chief Engineer, Washington.